PRINCE OF WALES ISLAND SUBSISTENCE STEELHEAD HARVEST AND USE PATTERN

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Abstract

Steelhead (*Oncorhynchus mykiss*), also known as *tayang*, in Haida and *Aasha't* in Tlingit, were harvested by Alaskan Tlingits and Haidas long before European contact. Steelhead continues to be harvested for subsistence use by residents of Prince of Wales Island. The most productive steelhead systems in southeast Alaska are in the southern half of the region especially Prince of Wales Island. Historically, steelhead were harvested by a variety of means, they were caught in weirs along with salmon and taken with gaffs, spears, and hand lines. More recently, approximately the last fifty years, steelhead have been taken for subsistence with rod and reel tackle. Steelhead were traditionally harvested in the winter as a source of fresh fish. Steelhead continue to be a source of fresh fish in the winter and early spring when salmon are not in the rivers and fresh fish can be difficult to obtain. Most Prince of Wales Island subsistence harvesters take between two and five steelhead a year, sharing harvests with family and friends. Steelhead are primarily eaten fresh, baked or fried. Steelhead are sometimes frozen, half smoked or pickled. Competition from a growing sport fishery is a concern of island residents.

Key Words: Haida, Local Knowledge, *Oncorhynchus mykiss,* Prince of Wales Island, southeast Alaska, Steelhead, subsistence, Tlingit, Traditional Ecological Knowledge.

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CHAPTER ONE: INTRODUCTION AND BACKGROUND

Introduction

This report describes the customary and traditional harvest and use of steelhead (*Oncorhynchus mykiss*), also known as *tayang*, in Haida and *Aasha't* in Tlingit, on Prince of Wales Island. Prince of Wales Island is located in southern southeast Alaska, the largest island (135 miles long and 45 miles across) in the Alexander Archipelago. Together Prince of Wales Island and its hundreds of adjacent smaller islands total more than 2,600 square miles. The island is accessible by small plane and ferry. Ketchikan is the nearest large settlement (Figure 1. Map of Prince of Wales Island).

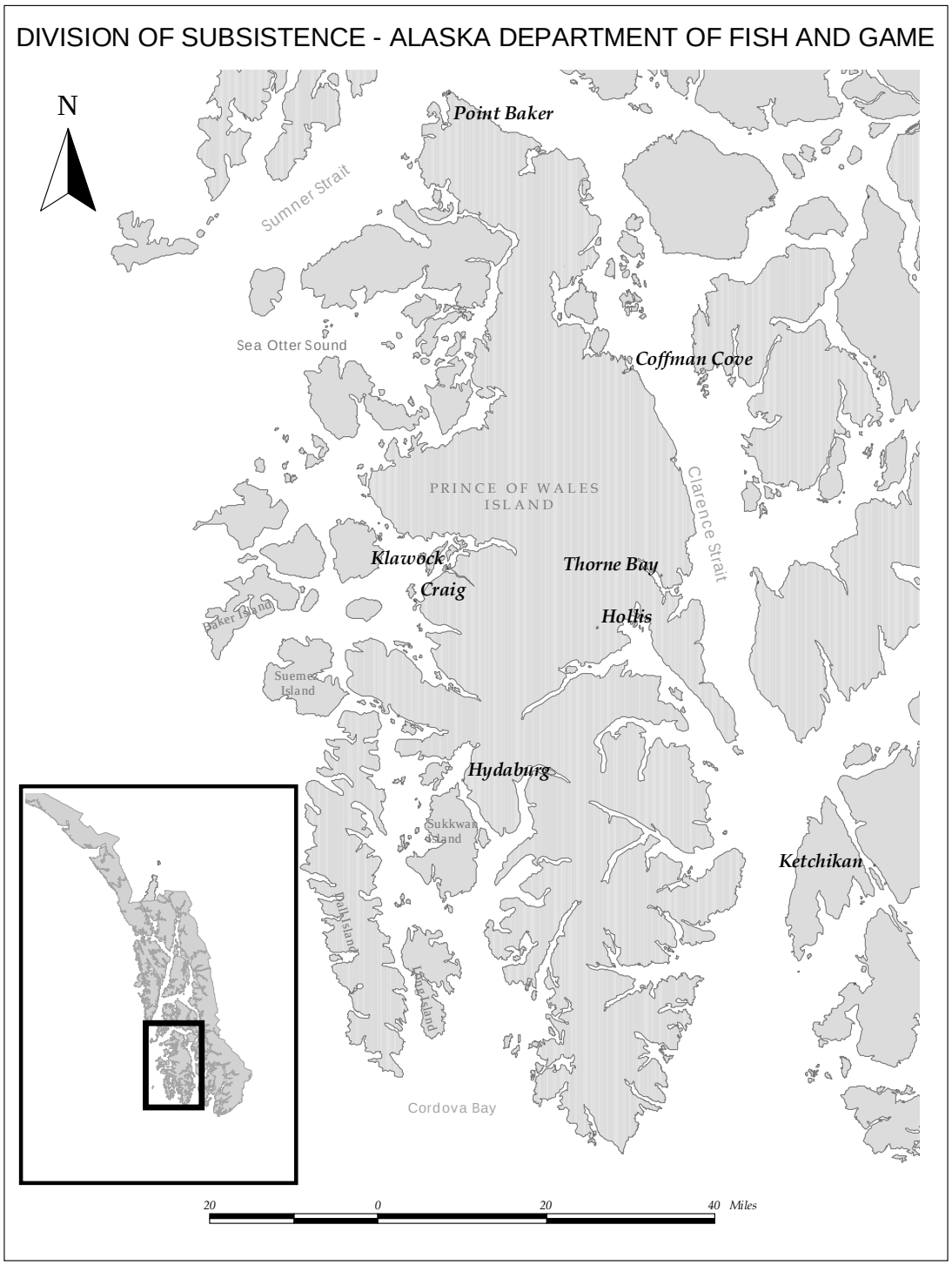
This was a cooperative project between the Alaska Department of Fish and Game, Division of Subsistence and Federally recognized Alaska Native organizations, Hydaburg Cooperative Association, Craig Community Association, and Klawock Cooperative Association. Mike Turek, Subsistence Resource Specialist III, was the principle investigator.

The Council initiated this project by requesting information on subsistence fishing patterns for steelhead on Prince of Wales Island. At the October 2002 Council meeting in Hoonah the Council requested that a project recommended for funding by the Technical Review Committee, "Regulatory History of Southeast Alaska Subsistence Salmon Fisheries Regulations," not be funded. The Council recommended replacing that project with a Prince of Wales Island Steelhead Traditional Ecological Knowledge (TEK) project. The Council requested that the Alaska Department of Fish and Game, Division of Subsistence, submit a proposal for the project. Funding for the project was limited to $40,000 the amount approved for the "Regulatory History of Southeast Alaska Subsistence Salmon Fisheries Regulations project."

Elements of the report include (1) Tabulation of the most recent Alaska Department of Fish and Game, Division of Subsistence steelhead harvest data for each community on Prince of Wales Island. (2) A description of the historic and contemporary methods of harvesting subsistence steelhead on Prince of Wales Island.

Prior to beginning key respondent interviews, a thorough literature review was conducted. Little has been written about steelhead in the ethnographic literature of the peoples of the Pacific Northwest Coast, including southeast Alaska. In the literature published on the Tlingit and Haida steelhead are only briefly mentioned (de Laguna 1960; 1972; Emmons, 1991; Moser, 1899; Swanton, 1904). The archaeological record also provides little evidence of steelhead. Nevertheless, anthropologists generally agree steelhead were harvested pre-historically in southeast Alaska (Fifield 2005; Smith 2005; Thornton 2005).

Figure 1. Map of Prince of Wales Island



The majority of information contained in this report was obtained through key respondent interviews and observations of subsistence steelhead fishing. Mike Turek conducted fieldwork on Prince of Wales Island in April and August 2004. A total of twenty-three interviews with steelhead fishers were conducted. Key respondents were selected based on their knowledge of Prince of Wales Island steelhead and their history as a steelhead fisher. The majority of the respondents were active steelhead fishers. Two of the elders interviewed no longer fish for steelhead but had fished on Prince of Wales Island since the 1930s. A more detailed description of the criteria used to select key respondents follows in the report below. Interviews were conducted in Hydaburg (six interviews), Craig (five interviews), Klawock (seven interviews), Kasaan (one interview), and Thorne Bay (four interviews). Issues addressed in interviews included harvest methods and gear, location of subsistence harvests, competition and crowding, changes in the fishery over time, and the interaction between commercial, sport, and subsistence fisheries.

Objectives

Objectives of this project, as outlined in the project investigation plan, are as follows:

- A descriptive analysis of historic methods of harvesting steelhead on Prince of Wales Island.
- Document Local Knowledge of steelhead through key respondent interviews.
- A descriptive analysis of the contemporary subsistence steelhead fishery on Prince of Wales Island.
- An assessment of the current trends and characteristics of the contemporary subsistence steelhead fishery on the island by observing the fishery and interviewing steelhead fishers.
- Tabulation of the most recent Alaska Department of Fish and Game, Division of Subsistence steelhead harvest data for each community on Prince of Wales Island.

Project Approach

As stated above, prior to beginning key respondent interviews a thorough literature review was conducted. This literature review revealed that little has been published on the customary and traditional uses of steelhead in southeast Alaska. Frederica de Laguna (1960, 1972), Swanton (1909), and Jones (1914) briefly mentioned steelhead. Emmons (1991) and Moser's (1899) published works provide more detail on the history and use of steelhead but are still limited.

The archaeological record is also lacking in evidence of steelhead use by prehistoric southeast Alaska Natives. According to Terry Fifield, Forest Service Archaeologist in Craig, Alaska, *". . . the bones of salmon and steelhead are indistinguishable archaeologically . . . speciation of salmonids on the basis of skeletal materials is next to impossible"* (Fifield 2005).

In spite of the lack of literature concerning the traditional harvest and use of steelhead and no archaeological evidence, experts in southeast Alaska archaeology and anthropology agree that since steelhead were present, they were likely harvested pre-

historically in southeast Alaska (Fifield 2005, Smith 2005, Thornton 2005). As noted by a regional archaeologist, *". . . , none of us doubt that pre-contact Tlingits were catching steelhead. The extensive wooden stake and stone trap systems on the streams that support steelhead populations certainly resulted in the taking of steelhead along with salmon"* (Fifield 2005).

The Alaska Department of Fish and Game, Division of Subsistence has not published a technical paper specifically focusing on the customary and traditional uses of steelhead in southeast Alaska. During the mid 1980s Division of Subsistence staff conducted research, including literature reviews on salmon, trout and steelhead for Alaska Board of Fisheries reports. The Board required this information in order to make customary and traditional use findings for these species.

Data were gathered for this report using standard ethnographic research techniques. Fieldwork, participant observation and key respondent interviews, were conducted by Mike Turek, Subsistence Resource Specialist III, on Prince of Wales Island from March 28 to April 9 and August 3 to 9, 2004. Key respondent interviews were conducted in five communities with twenty-three steelhead fishers. Steelhead fishing was observed on the Hydaburg and Klawock Rivers. Steelhead fishing sites were located on the Thorne River and Twelve Mile Creek. Other rivers and creeks used for steelhead fishing were also visited.

This research was funded by the Office of Subsistence Management, Subsistence Fisheries Resource Monitoring Program's Traditional Ecological Knowledge (TEK) research project category. Traditional Ecological Knowledge, TEK, is often interchanged with a variety of similar terms, such as traditional knowledge and local knowledge (Bielawski 1992; Brouwer 1998). TEK, traditional knowledge and local knowledge are terms describing knowledge passed down through generations. These terms also include knowledge acquired experientially by individual men and women in each new generation, adapted and added to the existing body of local knowledge in a constant adjustment to changing circumstances and environmental conditions (Brouwer 1998, Grenier 1998). TEK, traditional knowledge, and local knowledge describe locally-specific, cumulative, adaptive knowledge which allows people in a particular geographic area to get the most out of their natural environment (Vanek 2003). These terms are used to differentiate the knowledge developed by a given community in a non-academic milieu, from the knowledge generated through government research centers, universities, and private industry. TEK, traditional knowledge and local knowledge includes the knowledge of indigenous peoples as well as any other defined community (Warren 1992).

One of the goals of this project was to use local knowledge in describing the contemporary subsistence steelhead fishery. Ethnographic research methodologies including key respondent interviews and field observations were the research methods relied on for collecting this information. In contrast to questionnaire surveys and similar quantitative methods of social research, key respondent interviews and field observations

pursue depth rather than breadth of coverage; this methodology describes human activities, it does not quantify them.

Key respondents were selected based on their knowledge of Prince of Wales Island steelhead and their history as a steelhead fisher. Deciding whom to interview was a lengthy process. First, the Federal Prince of Wales Island subsistence steelhead permit lists for winter and spring 2003 were reviewed. Following review of permits, both federal and state Prince of Wales Island fisheries biologists were interviewed. Biologists were asked which steelhead fishers they considered to be the most experienced. The project was also discussed with Terry Fifield, Forest Service archaeologist and long-term resident of Craig. Fifield suggested contacts in island communities. Turek also relied on his own knowledge and experience to locate potential key respondents. As in all Subsistence Division fieldwork, input from knowledgeable community members was an important source in the selection of key respondents. Turek worked with Prince of Wales Island long-term residents in Craig, Klawock, Hydaburg, and Thorne Bay to identify potential key respondents.

The first interview for this project was conducted with a local subsistence expert on his fishing boat in the Craig boat harbor. This open-ended conversation was used to develop the interview schedule (Appendix A). Researchers then used the interview schedule as a guide for the rest of the interviews in Craig, Klawock, and Hydaburg. Interviews took from thirty minutes to one hour and thirty minutes.

Due to funding and time limitations, and in order to develop local research capacity, tribal staff and locally hired research assistants conducted interviews in Craig (4 interviews), Klawock (6 interviews), and Hydaburg (3 interviews). Turek conducted three extended interviews in Hydaburg, one in Klawock, two in Craig, four in Thorne Bay and one in Kasaan. In August Turek conducted follow up interviews with select respondents.

Local Involvement and Capacity Development

The Alaska Department of Fish and Game (ADF&G), Division of Subsistence signed cooperative agreements with the Hydaburg Cooperative Association, Craig Community Association, and Klawock Cooperative Association. Cooperative agreements listed responsibilities and expectations of project partners. In signing cooperative agreements tribal organizations agreed to assist Division of Subsistence staff in documenting the contemporary harvest and use of subsistence steelhead. Under these agreements, the ADF&G provided Federal Fisheries Information Service funds for the tribal organizations' administrative costs, the salary of locally hired staff and honorarium for key respondents. Funds for each cooperative agreement came to $3,114.00, totaling $9,342.00, thirty percent of total project costs. Expenses for each cooperative agreement were based on a cost of $15.00 per hour for tribal staff work, key respondent honorariums (at no more than $200.00 per respondent and for no more than six key respondents) plus twenty percent for tribal administrative costs.

Locally hired research assistants worked with ADFG staff to select key respondents, and they helped with interviews and made observations of the subsistence steelhead fishery. Research assistants and tribal staff conducted thirteen key respondent interviews. Anthony Peele, Hydaburg Cooperative Association, assisted with the selection of key respondents and helped with interviews in Hydaburg. Mr. Peele also conducted three key respondent interviews in Hydaburg and assisted Mr. Turek with observations and documentation of subsistence steelhead fishing on the Hydaburg River. John Morris, Craig Community Association, assisted with the selection of key respondents and conducted four interviews. James Rowan, Klawock Cooperative Association, assisted with fieldwork and the selection of key respondents in Klawock. Mr. Rowan accompanied Mr. Turek in the field on the Klawock River and several other fishing sites. He also helped Turek with interviews and conducted six interviews himself. This was the second subsistence fisheries research project Mr. Rowan has worked on with the Division of Subsistence.

CHAPTER 2: RESULTS

History of Traditional Steelhead Use in Southeast Alaska and Prince of Wales Island.

As discussed above, anthropologists believe steelhead were harvested pre-historically in Southeast Alaska (Fifield 2005; Smith 2005; Thornton 2005). Several sources indicate they were utilized historically (de Laguna 1960, 1972; Jones 1914; Moser 1899; Swanton 1904). Swanton (1904:458) reported that Tlingits believed that king salmon, once they entered spawning creeks, turned into steelhead.

Historically, steelhead were harvested by a variety of means. Steelhead were speared or gaffed, and caught in weirs and traps along with salmon. Since the 1950s and perhaps earlier, rod and reel tackle have also been used to catch steelhead (de Laguna 1972).

Moser (1899:65) documented traditional steelhead harvest techniques near Ketchikan in the late 1890s. According to Moser, gaffing (Figure 2) was observed at rapids on Fish Creek: *" At the time of our visit (June 9) a few steelheads were running upstream, and at one of the rapids an Indian was catching them by means of a large, pointed hook, secured to a stout pole, which he held in the current, and, by sight or touch, hooked the fish broadside on."*

Figure 2. Gaffing on Ketchikan Creek, September 1, 1904 (Photo No. 418, John N. Cobb Collection, University of Washington, reproduction number NA2702).

Tlingits and Haidas use both barbed, and barb-less hooks for spearing and gaffing salmon and steelhead. Haidas and Tlingits in the southern part of southeast Alaska including Prince of Wales Island used a tool that served as both a spear and a gaff. "*The extreme Southern Tlingit used this implement as a gaff, and also as a spear [harpoon] by reversing the hook and fitting the end of the shank in the upper part of the groove under the seizing. . . . This type of gaff is called kohk-da kehk-kah, "come-back hook. . .*" (Emmons 1991:111). This combination spear and gaff is still used by some fishers on Prince of Wales Island (figures 3 & 4).

Figure 3. Claude Morrison shows a traditional Haida Steelhead and Salmon Spear/Gaff

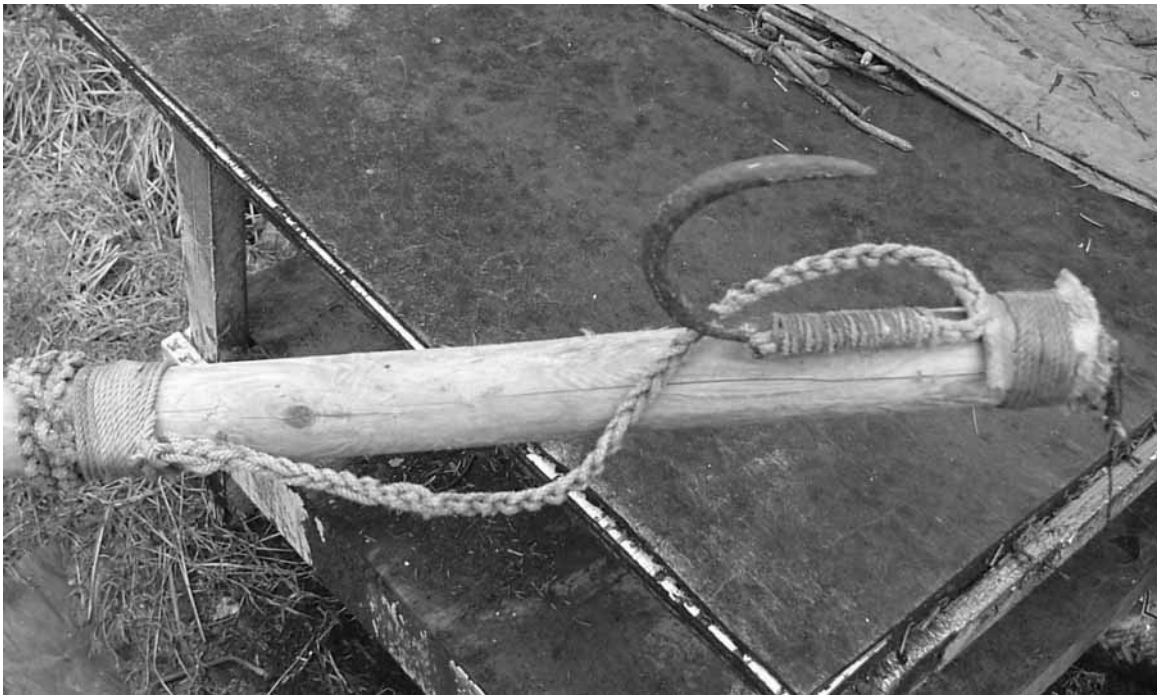


Figure 4. Close up of traditional Haida spear/gaff. Note the barb-less hook.

Anthropologist Steve Langdon lived and worked in Klawock during the 1970's and observed Klawock Natives steelhead fishing on the Klawock and Harris rivers. At this time steelhead were being taken in the Klawock River during November, February, March and April. Langdon was told that steelhead were harvested throughout the winter and early spring based on subsistence needs and availability of the fish (Langdon 2002).

On the Klawock and Harris rivers, Langdon observed subsistence fishers using rod and reel tackle with baited hooks. Langdon described the baiting method used by Klawock fishers, cured salmon eggs tied into small bags of nylon mesh made from women's stockings. The fisher attached a bag of eggs to a hook and cast them into the water (Langdon 2002).

Langdon (2002) also observed Klawock Tlingits using a spear about 10 to 12 feet long and about an inch to an inch and half in diameter. Fishers waded into the water, located a steelhead and threw the spear in the direction of the fish. If they missed, the spear fell into the water and floated, making retrieval easy. The spear had a modern, metal barbed hook with the shank of the hook flattened and tied along the shank at the top of the spear (figure 5). The hook was secured to the spear with approximately two meters of line tied through the eye-hole of the hook. When the spear was thrown and the hook penetrated a fish, the hook would stay in the fish but remain attached to the spear shaft by the two-meter line. The spear shaft, attached to the line and hook was retrieved and the fish played until it was landed or gaffed (Langdon 2002).

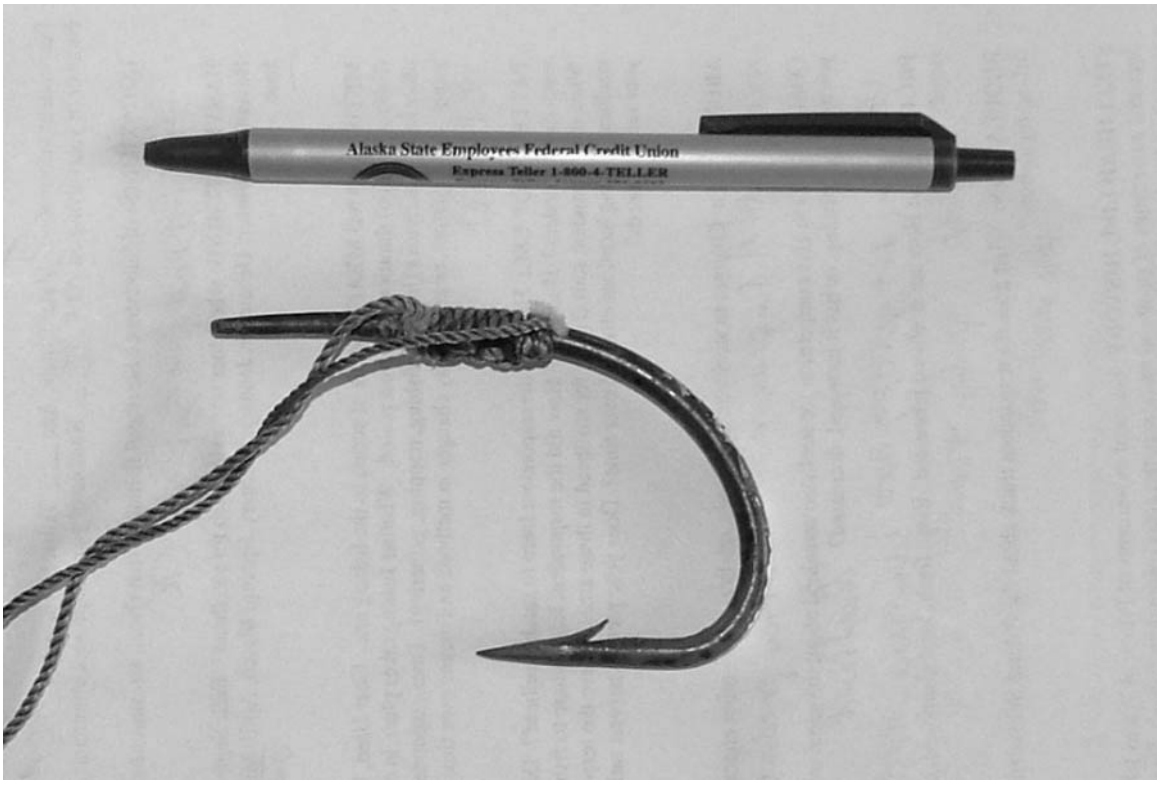


Figure 5. Modern metal barbed hook used on spear/gaff by contemporary Hydaburg subsistence fisher, similar to hook described by Langdon (2002).

Langdon found that steelhead were taken in relatively small numbers; rarely were more than five fish taken in a year by any one fisher. Steelhead were being taken for both personal consumption and for distribution to others in the community. Due to the low harvest numbers Langdon speculated that most of the steelhead were eaten fresh or frozen, adding that on several occasions he was offered pickled steelhead by Native families (Langdon 2002).

Regulatory History, Prince of Wales Island Steelhead

State Regulatory History

In 1989, the Alaska Board of Fisheries recognized customary and traditional use of steelhead in *"Section 3-B in waters east of a line from Point Ildefonso to Tranquil Point and in waters of Warm Chuck Inlet north of a line from a point on Heceta Island at 55ø 44' N. lat., 133ø 25' W. long. to Bay Point, and in Section 3-C in waters of Karheen Passage north of 55ø 48' N. lat. and east of 133ø 20' W. long. and in waters of Sarkar Cove and Sarkar Lakes."* (Alaska Fish and Game Laws and Regulations, Annotated, 2003-2004 Edition, 5 AAC 01.716 Customary and traditional uses of fish stocks and amount necessary for subsistence uses.)

Although there is a positive customary and traditional use finding for steelhead in marine waters and some fresh waters of Prince of Wales Island, state regulations prohibit the

issuance of subsistence permits for steelhead. However steelhead taken incidentally by gear operated under the terms of a subsistence permit for salmon may be legally retained for subsistence purposes. Permit holders are required to report on permit calendars any steelhead incidentally taken. (Alaska Fish and Game Laws and Regulations, Annotated, 2003-2004 Edition, 5 AAC 01.730 Subsistence Fishing Permits (i)).

During the 1993/94 regulatory cycle for southeast Alaska, the Alaska Board of Fisheries changed sport and commercial fishing regulations, limiting the sport harvest and commercial sale of steelhead. Region wide sport fishing regulations were changed, prohibiting the use of bait from November 16 through September 14 and limiting the harvest to one fish per day and two fish per year, 36 inches or greater in length. These regulations effectively eliminated the legal harvest of steelhead on Prince of Wales Island. The Board also prohibited the sale of steelhead caught in commercial net fisheries. In commercial purse seine and gillnet fisheries of southeast Alaska, Commercial Fisheries Entry Commission permit holders can retain steelhead for home use but cannot sell it.

During the 2003 Alaska Board of Fisheries cycle, the region wide sport regulation for steelhead was revised. The revision was a regulatory action submitted by the Alaska Department of Fish and Game clarifying that a 2 fish daily bag limit would apply only to the Klawock River and Ketchikan Creek; the only two locations where adipose clipped (hatchery) steelhead are found.

Federal Regulatory History

During the 2001 fisheries regulatory cycle, the Federal Subsistence Board (FSB) passed regulations allowing subsistence fishing for steelhead on Prince of Wales Island. During the 2003 fisheries regulatory cycle, the Federal Subsistence Board passed the regulations currently in effect (see Appendix B). The Federal Subsistence Board's modification changed the harvest limit from weekly to annually to allow an orderly management of the fishery, provide documented harvests, and to avoid exceeding the harvest cap. After two years of experience with the fishery, Federal staff reported to both the Southeast Regional Advisory Council (SERAC) and the Federal Subsistence Board on the status of the fishery.

During the 2004 fisheries regulatory cycle, both the Southeast Regional Advisory Council and the Federal Subsistence Board opposed proposals requesting mandatory weekly and monthly reporting requirements, mandatory fin clipping of subsistence harvested steelhead, and a 36 inch minimum size limit on fall season steelhead systems, small steelhead systems, and the overall fishery. All of these proposals were opposed based on the presumed low participation in the fishery, and the low number of steelhead reported harvested on Federal permits. The SERAC supported a proposal to add Kosciusko Island to the current Prince of Wales Island subsistence steelhead fishery. Based on the SERAC's recommendation the Federal Subsistence Board passed a regulation permitting the subsistence harvests of steelhead on Kosciusko Island.

Contemporary Harvest Patterns

Steelhead are harvested in late winter, early spring and fall on Prince of Wales Island. A freshwater, winter fish, steelhead are available when salmon are not in streams. Spring runs are generally larger than fall runs in southeast Alaska, allowing for larger harvests. Late winter, early spring fishing normally begins in late February or early March. Most harvest takes place during spawning, from mid-March to mid-June. A few runs also enter streams during the summer and fall. Some harvests do occur in the spring and as late as June. Limited harvests occur during the fall.

Steelhead are harvested in a number of the Prince of Wales Island rivers, streams and creeks. Although some of the smaller creeks are fished, the water bodies of greatest use are the Klawock, Thorne and Hydaburg rivers. Island residents use the Klawock and Thorne rivers for subsistence and sport steelhead fishing. These two rivers are also popular with non-resident sport steelhead fishers. Hydaburg residents are the primary users of the Hydaburg River. These three rivers are accessible by road.

The other rivers, creeks and streams used for subsistence steelhead fishing include the Harris River, Staney Creek, Steelhead Creek, the Black Bear River, Karta River, Eagle Creek, Rio Beaver, Saltery Creek, Nautzuhini Creek and Twelve-Mile Creek (Figure 6).

Gear

Steelhead were traditionally harvested with spears and gaffs, they were also caught in weirs and traps along with salmon. Since at least the 1950s, rod and reel tackle have been used in the larger rivers. Spin casting gear (with and without bait) has been commonly used since the 1950s. Today, some subsistence fishers are using fly rods and artificial flies. The small, brushy, log choked creeks on Prince of Wales Island are difficult to fish with rod and reel tackle. Spears, gaffs and hand lines (snagging gear) are the preferred gear for the smaller creeks.

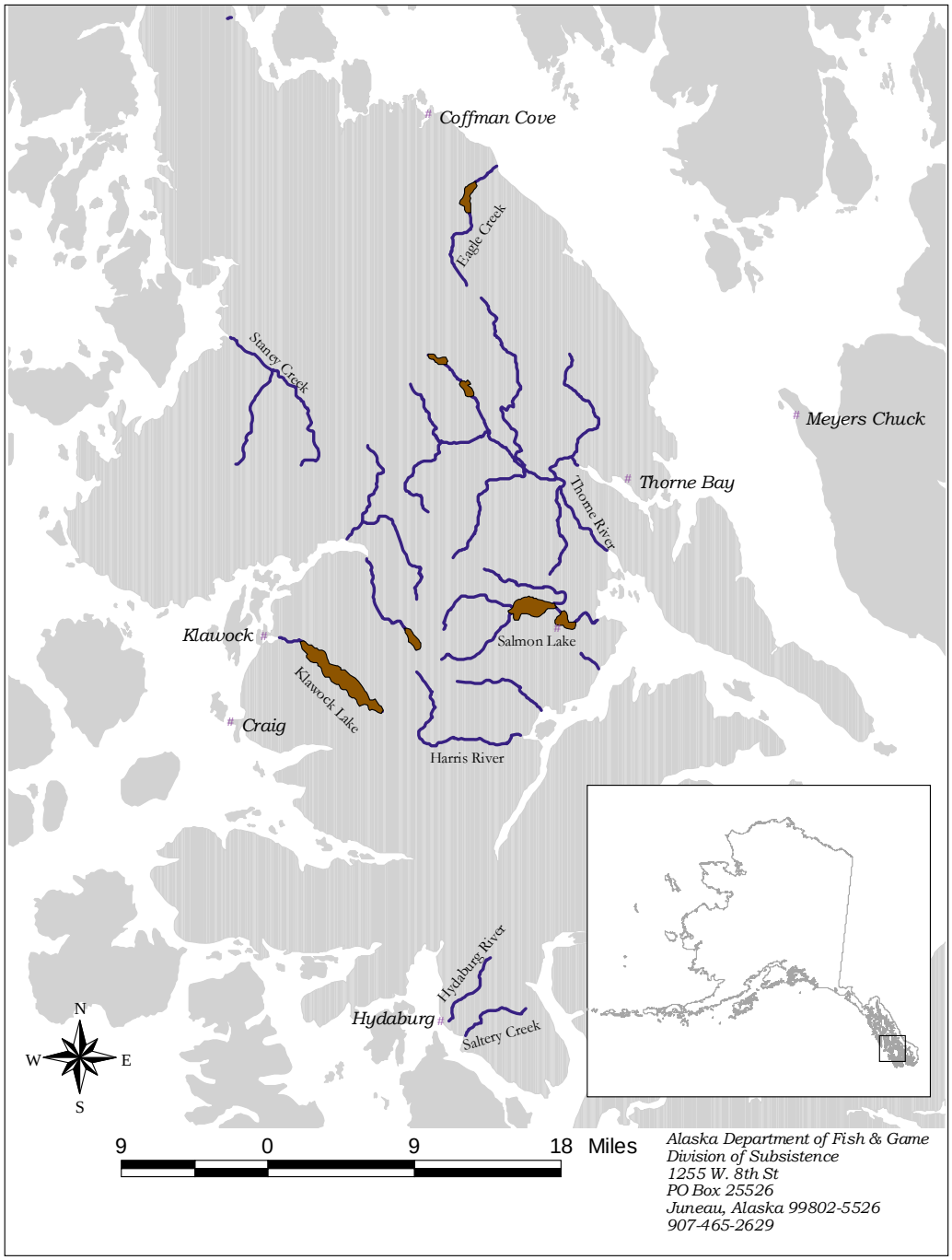


Figure 6. Prince of Wales Island Steelhead Fishing locations.

Snagging gear - locally made treble hooks, consisting of three halibut hooks bound together with line and secured to a hand line - has been used for at least 75 years on the island. Known in Hydaburg as the "Hydaburg Snagger," these treble hooks are also used in Klawock, and at one time marketed in a local store as the "Klawock Spinner" (Figure 7). The snagging gear (hand line and treble hook) can be thrown or used in conjunction with a pole of various lengths. The pole is often made in the field from a limb or branch of a tree or bush. The pole, held by the fisher, has the hand line running down the pole and through a forked end with treble hooks hanging off the forked end of the pole (Figure 8). By using a pole the fisher can place the hook close to a fish before setting the hook. When hand line, treble hook and pole are used in this fashion, the gear functions as a gaff. Spears, gaffs and snagging gear are the preferred gear for fishers fishing the small, brushy creeks on Prince of Wales Island.

When using the gaff, spear or snagging gear the harvester's approach to taking steelhead differs from that of an angler. Steelhead are stalked, a technique more like hunting than fishing. A successful harvester must have knowledge of the area he or she is fishing and the behavior of steelhead. The fisher has to know where the fish hide along the stream banks and under logs and should be able to predict where the fish will go when spooked. The harvester or a partner will sometimes get into the creek and force the fish into a preferred area. The spear/gaff or pole is often used to probe under logs and stream banks to move the fish. The harvester must be able to get close to the fish to use the spear, or set the snagger.

Figure 7. Snagging gear - locally made treble hooks - three halibut hooks bound together with cotton line.

Figure 8. Preparing pole or stick for setting hook.

Harvest and Participation Levels

Individual harvesters usually take several fish annually, between two and five fish for an individual harvester are common per year. Fishers share harvests within the community. Subsistence steelhead harvest traditions are strongest in the Prince of Wales Island communities of Craig, Klawock, Kasaan, and Hydaburg. Participation in the subsistence steelhead fishery continues in these communities but has apparently declined since the late 1980s and early 1990s. Limited participation occurs in Coffman Cove and Thorne Bay. Residents of Thorne Bay and Coffman Cove interviewed for this report stated that they consider themselves to be primarily sports steelhead fishers, catch and release fishers who do not support subsistence steelhead harvests.

Key respondents commented on the declining participation in subsistence steelhead fishing and discussed several reasons for the decline. The state's 1994 regulatory restrictions which made spears and gaffs illegal and limited the harvest of steelhead to 2 fish per year, 36 inches or longer, led to decreasing harvests by Craig and Klawock subsistence steelhead fishers. These regulations and the enforcement of them on the Klawock River also contributed to the decline of the use of spears and gaffs by Craig and Klawock fishers.

In Klawock and Hydaburg respondents commented on the decreasing participation of steelhead fishing by young men. Respondents described how school aged boys and young men used to harvest steelhead and sell or give them to the village's elders. One Hydaburg respondent offered an explanation for the declining participation in fishing. *"It seems like there is less fishing occurring today then in the past. The younger . . . people don't seem to harvest as often as we did in the past. We fished way more because that was all there was to do."*

In the last decade more legal harvest options for fresh winter/spring fish are available than in the 1980s and 1990s. Legally harvested fresh winter fish are available due to changes in the commercial and subsistence halibut fisheries. Individual Fishing Quotas (IFQs) and recent Federal subsistence halibut regulations have expanded legal harvest opportunities, thus increasing the availability of halibut and lessening the dependence on steelhead harvests for fresh winter/spring fish.

Demographic changes have also been occurring on Prince of Wales Island during the past decade. Changes in the timber industry have contributed to the island's changing demographics. The decline of logging in the late 1990s resulted in the loss of high paying employment, particularly in the timber dependent communities of Thorne Bay and Coffman Cove. Many of the timber workers who came to Prince of Wales Island in the 1980s and early 1990s have left the island. Key respondents and island residents reported that many of these timber workers were active steelhead harvesters. The loss of these active steelhead harvesters has further reduced steelhead harvests on Prince of Wales Island.

Harvest Data

Federal Subsistence steelhead regulations for Prince of Wales Island require separate permits for winter and spring seasons. Permits, which include a harvest record, must be returned within 15 days of the close of the season. The spring 2003 Federal steelhead fishery resulted in 76 Federal permits issued and 24 steelhead reported harvested from island systems. The winter 2003 Federal steelhead fishery resulted in ten permits issued and two steelhead reported harvested. The spring 2004 Prince of Wales/Kosciusko Islands Federal steelhead fishery resulted in 40 permits issued and a reported harvest of 24 steelhead (Reeves, 2004).

The Spring 2003 Federal fishery reported harvests from the three largest road accessible systems, the Thorne and Klawock rivers, and Staney Creek. The Winter 2003 fishery only reported harvests from the Klawock River. Because of the Federal Subsistence Boards' December 2003 Customary and Traditional use determinations revisions for Prince of Wales Island waters, harvests reported during the Spring 2004 fishery included road accessible systems not reported previously, the Harris River and Eagle/Luck Creek. No harvests were reported from any small road accessible or small remote systems during this period (Reeves, 2004).

Discussions with key respondents, tribal staff, and local subsistence harvesters during fieldwork on Prince of Wales Island suggest that Federal subsistence permit data may be less accurate than assumed. Some steelhead fishers are not reporting harvests. Tribal staff in Hydaburg estimated steelhead harvest for winter/spring 2003 to be approximately 100 for their community. In Kasaan, tribal staff estimated 25 steelhead harvested for winter/spring 2003. People interviewed in Craig and Klawock were reluctant to make harvest estimates for their communities but commented that the Federal harvest data appeared to be low and this was probably due to non-reporting by active subsistence fishers.

The Alaska Department of Fish and Game, Subsistence Division collected harvest data through household harvest surveys in Prince of Wales Island communities in 1985 and 1997. In 1985 the Division of Subsistence conducted a household harvest survey in Klawock (Ellanna and Sherrod 1987). The 1985 survey included harvest estimates for steelhead. During the 1984 harvest year the estimated total amount of steelhead harvested by Klawock residents was 338 fish or 2.58 fish per household and .71 fish per capita (table 1).

In 1997, 1998 and 1999 the Alaska Department of Fish and Game, Division of Subsistence, in cooperation with the USDA Forest Service conducted socioeconomic surveys in twelve Prince of Wales Island communities. These surveys included steelhead harvests. Klawock is the only community with two years of steelhead harvest data, 1984 and 1997.

A comparison of Klawock's 1984 and 1997 steelhead harvest data illustrates the changes in harvest and use of steelhead in one Prince of Wales Island community. In 1997 the number of Klawock households had more than doubled since 1984, growing to 303. For the 1997 harvest year the total estimated steelhead harvest for Klawock was 226 steelhead, 112 (33 percent) less than the 1984 harvest of 338 steelhead. By 1997 both the number of steelhead per household (.75), and per capita (.27), had declined. In 1997 only 10.4 percent of the 303 households reported using steelhead, 11.3 percent attempted to harvest, 9.4 percent harvested steelhead, and 1.9 percent reported giving or receiving steelhead. This is compared to 1984, when 56 percent of the households used steelhead, 44 percent attempted harvests, 39 percent harvested, 14 percent gave steelhead away, and 25 percent received steelhead (Table 1.). The reasons for declines in participation, which resulted in declining harvests, are discussed above but it is worth noting that according to knowledgeable Klawock and Craig residents, subsistence steelhead fishers in Klawock and Craig were particularly affected by the states' 1994 steelhead regulations (which eliminated harvest except for fish over 36 inches) and the associated enforcement of these more restrictive steelhead regulations.

The 1997, 1998 and 1999 survey data also includes information about steelhead harvest and use patterns. According to the survey data only two island communities, Hydaburg and Klawock, reported harvesting steelhead with non-commercial gear other than rod and reel tackle. Based on 2004 fieldwork the non-commercial gear category includes spears/gaffs and snagging gear. Hydaburg households reported a total harvest in 1997 of

172 steelhead; 95 fish or 55.2 percent of the steelhead were caught with rod and reel, while 77 fish or 44.8 percent of the steelhead were taken with non-commercial gear. Klawock households reported a total harvest in 1997 of 226 steelhead; 214 fish or 94.6 percent of the steelhead were caught with rod and reel, and 11 or .05 percent were taken with non-commercial gear (Table 1).

Six island communities, Coffman Cove, Craig, Hollis, Kasaan, Naukati Bay and Thorne Bay reported taking all of their steelhead with rod and reel tackle. In 1997 Point Baker reported taking a total of 34 steelhead, 31 with commercial gear and 4 with rod and reel. In 1997 Port Protection reported taking 37 steelhead, 14 with commercial gear and 22 with rod and reel (Table 1). Point Baker and Port Protection are located on the northern end of Prince of Wales Island on Sumner Strait. Both communities have commercial fishing households which catch steelhead in their commercial net and troll fisheries.

The 2004 fieldwork confirms the harvest survey data, indicating that Hydaburg fishers use spears/gaffs and snagging gear more than other island communities. Klawock fishers use spears/gaffs and snagging gear but far less frequently than Hydaburg fishers. The primary reason for this gear choice is based on locations of steelhead fishing sites. On the Hydaburg River where residents of the community fish for steelhead, the river is brushy and covered with fallen logs, making fishing with rod and reel impractical. These conditions are ideal for spearing and snagging. However on the Klawock River, where many residents of Klawock fish for steelhead, the river is open and wide, ideal for fishing with rod and reel.

CHAPTER 3: KEY RESPONDENT INTERVIEWS

Mike Turek conducted three extended interviews in Hydaburg, one in Klawock, two in Craig, one in Kasaan, and four in Thorne Bay. Local hires and tribal staff conducted key respondent interviews in Craig (4 interviews), Klawock (6 interviews), and Hydaburg (3 interview). Summaries of interviews from each community are detailed below.

Hydaburg Key Respondent Interviews

Anthony Peele, Hydaburg Cooperative Association, assisted Mike Turek with selection of Hydaburg key respondents, interviews (conducting three interviews himself), and fieldwork. Turek conducted three extended key respondent interviews in March and April. In August Turek returned to Hydaburg for follow up interviews and worked with Robert Sanderson, an expert on Haida subsistence traditions. Peele, a tribal member, steelhead fisher and subsistence hunter was instrumental in assisting Turek with the selection of the Hydaburg key respondents. Respondents were selected based on their experience as a steelhead fisher in the Hydaburg area. The respondents were long-term (between thirty and ninety year residency) Hydaburg residents and all but two, were active steelhead fishers. The two elders interviewed no longer fished for steelhead but had fished for steelhead in the Hydaburg area for most of their lives. Respondents' ages ranged from the mid 50s to 93 years old. Interviews were conducted using the interview schedule/guidelines (Appendix A). The three interviews Turek conducted were digitally recorded. Due to funding and time limitations transcriptions of all three interviews are yet to be completed.

The Hydaburg Cooperative Association hired Robert Sanderson to work with Turek on the steelhead project. Mr. Sanderson is a tribal member, a graduate of Washington State University, (Bachelor of Science), respected elder and an expert on Haida culture, history, and resource management. He has also worked as a commercial fisherman and conducted cultural resource inventories for Sealaska Corporation. Turek spent several days with Mr. Sanderson in March, April and August 2004, discussing steelhead and other subsistence resources. Several hours of conversations were recorded and transcribed.

Mr. Sanderson authored a report on the subsistence use of steelhead by Hydaburg residents. This report, with minor editing for style, not content, and additional information from interviews with Mr. Sanderson is included below. Following Mr. Sanderson's report is a summary of the other key respondent interviews conducted for the report.

<u>Subsistence Use of Steelhead in the Hydaburg-Cordova Bay Area- Southwest Prince of Wales Island</u> by Robert Sanderson

Steelhead are present, in varying numbers, in practically all streams that support salmon runs. There are winter runs in the larger streams (Klawock River, Karta River) and all systems support spring runs of steelhead during April and May. In general the larger the

streams, the earlier the steelhead return. March to May (Nutkwa, Hunter Bay), April to May (Hydaburg River, Saltery creek, Natzuhini stream), and late April to May, smaller systems, such as Dunbar inlet, Sukkwan Island streams, Dall Island streams, and smaller drainages on Prince of Wales Island. Streams that support strong runs of silver salmon, (coho salmon) generally also support good runs of steelhead.

Subsistence use of steelhead occurs in most of the streams in this area. The majority of the subsistence steelhead are taken in two streams, the Hydaburg River and Saltery Creek. The Hydaburg River runs through town and has about eleven square miles of drainage. Saltery Creek is two and a half miles south of the village and about the same size of drainage as the Hydaburg River. Both systems are accessible by road, in the past you had to take a boat to Saltery Creek. These two systems provide for the subsistence steelhead needs of the community. Both streams have substantial runs, and are easily accessible. Other streams are utilized to some extent, if the two primary local streams have low runs, or if a fishing opportunity arises when residents of Hydaburg are in the area.

In these systems, Hydaburg River and Saltery Creek, steelhead are spring run fish. In February you might see one, a few might be seen in March. In April the run picks up, around the first to the tenth or fifteenth it starts building, the run peaks and then declines rapidly. By the time King Salmon are in the bay you won't catch a steelhead.
When the steelhead start showing up in the Hydaburg River around the end of March there are kids every morning watching for the steelhead, trying to get them with their snaggers. Steelhead come up over the rapids at night, two or three at a time and sometimes more, seven or eight. A new bunch comes up every morning. There are more steelhead in the creek than you think, because they hide so good. It is surprising how fast they can get up a stream. Steelhead are strong swimmers, like silvers, they can jump over the same type of rapids as silvers. They leap just like a silver salmon. These are very tough fish.

Not only is the Hydaburg River a productive steelhead system, it is also a very productive salmon system. Steelhead are found in almost every stream where there are salmon. In the really tiny streams you might have only one or two steelhead, but most salmon streams will have some steelhead. The larger streams are very productive, not only for steelhead but for silvers (coho salmon) too. Some of the streams on southern Prince of Wales Island are even more productive than the Hydaburg River or Saltery Creek. We know from local knowledge that the rivers flowing into Hunter Bay and Nutkwa Inlet are very productive steelhead systems. There has been no steelhead fishing effort on those streams, yet.

The characteristics of these two streams (Hydaburg River and Saltery Creek) *make using a rod and reel difficult, there's too much brush. If you try casting with a rod you will tangle up hopelessly in brush. I've never caught a steelhead with a rod and reel. People here use a pole or spear and a snagger, a treble hook on a hand line, to catch steelhead. Steelhead fishing in Hydaburg is difficult, conducted mostly by young men, teenagers. The young men catch, distribute and sometimes sell (for a small amount of cash)*

steelhead to people in the community. It requires physical effort, you have to walk in the creek and climb over logs - there are no trails along the river and creeks. People from outside the community do not fish these systems, access is too difficult and you can't use a rod and reel.

Rod and reel tackle is used in only a few of the large streams Klawock River, Staney Creek, Hunter bay stream, and Karta River. In the Hydaburg-Cordova Bay, Dall Island area, Hunter bay stream, and Nutkwa lagoon are probably the only streams where steelhead can be fished successfully using a rod and reel. All the other streams in this area are not suited for rod and reel. Due to brushy conditions along stream banks, numerous logs and snags in streams there is no room to handle a fishing rod and lines. Other methods must be utilized in most of the streams in the Hydaburg area.

Steelhead in the Hydaburg River don't just stay out in the deep water in the middle of the river, like they do in the Klawock river, they are often found under logs, in shallow water next to a boulder or under the river banks. The spear is quite useful under such conditions. Steelhead are skittish and can hide in places you can't believe. You can take the butt end of the pole and poke under the banks, feel for the fish, and poke them out of there. If you have to chase them around, most of the time you won't get them. There are certain areas of the river and creeks where you will find concentrations of steelhead, you get to know these places when you are young through walking the creeks.

Sometimes I would take both a spear and a snagger to catch steelhead because sometimes you can't reach a fish with a spear, they are too far out in the river, so you have to use a snagger.

The pole or spear was quite common when I was a kid, its not as popular today but a few people are still using it. The spear consists of a long pole, 12- 14 ft. long, 1 1/2 to 2 inches in diameter, with a hook attached to the pole and designed to come loose after the fish is speared (figures 3 and 4). The hook is about a quarter of an inch thick (or less) made of steel and sharpened to a point. The hook usually does not have a barb. The hook is attached to the pole by a short line. The hook can be reversed on the pole and used like a gaff. The shank of the hook slips into a groove cut into the pole under a leather washer with line wrapped around the washer at the tip of the pole. The hook is secured to the pole with line about a foot and a half from the end of the pole. The pole can be used either as a spear or a gaff depending on the direction the hook is pointing. When the fish is hooked, the hook detaches but remains secured to the pole by the line and you can drag the fish to shore.

Typically the spear fisher wades into the stream, walking along the stream banks using the butt end of the pole to poke around logs, roots, and banks, where steelhead may be hiding, forcing the fish out in order to spear the fish. From personal experience utilizing a spear and snagger I have caught as few as one steelhead and as many as seventeen in a day. Not all attempts are successful; probably more are unsuccessful. I've gone to places where you see ten or twelve steelhead and catch nothing, other times you see five and get five. You get lucky. I saw 200 one time and caught 17.

The other method used by subsistence fishers involves using a snagging hook (figure 7). This gear consists of three hooks, usually halibut J-hooks or commercial salmon trolling hooks, lashed together like a treble hook. The shanks are wrapped with a core line in the middle. In the past cotton line or linen were used, now it's synthetic. The hooks are attached to a line of heavy twine and thrown out into pools and areas where a spear cannot be utilized Steelhead are very skittish, you have to sneak up on them. Sometimes you have to climb onto a log in the river, they like to hide under logs, drop the snagger and let it drift against the fish, then give the snagger a jerk. You have to jerk pretty hard because their skin is so tough, two to three times as tough as dog salmon.

The snagger is probably at least 100 years old. They had them when I was young and probably before that. The missionaries first came here around 1880 – 1882, closely followed by the commercial fishing industry. There was a big troll fishery and you could use those troll hooks, what they called herring hooks, for the snaggers. Those hooks were galvanized and they had a nice heavy shank, they worked well.

The snagger and spear are also used for catching coho and dog salmon.

Most steelhead are taken by younger people, especially teenagers, for family use, and for sharing, particularly with elders.

Steelhead are like salmon, abundant some years, less in others, even scarce occasionally. There are years that steelhead are really abundant, extra abundant, almost like salmon. It's been like this maybe two or three times in my life. Other years they are scarce, they get to be rather scarce.

With few exceptions, steelhead are utilized immediately, or frozen for short periods, to utilize later. Sometimes steelhead are salted in containers, smoked, or kippered and canned.

During my life I have had a chance to observe practically all of the streams in this area, from the standpoint of abundance, subsistence utilization, and timing of runs and methods of harvest. Hydaburg was established in 1912, and steelhead have been utilized since then using the methods described above. There probably will be no pressure on the steelhead stocks by sport fishing in this area, with the possible exception of Hunter Bay stream, Klakas Lake stream and Nutkwa lagoon stream. The steelhead harvest for subsistence purposes in the Hydaburg area seems to be at the same level since the founding and establishment of Hydaburg. As mentioned above, the bulk of the steelhead subsistence fishery occurs in two streams, Hydaburg River and Saltery Creek, both streams having substantial runs of steelhead. It is anticipated that steelhead runs will be harvested in other streams, which have recently been made accessible by road.

Summary of Hydaburg Key Respondent Interviews

Mike Turek conducted in depth interviews with two other Hydaburg residents, a respected tribal elder and a resident of thirty years. The elder discussed the use of the traditional Haida spear and his many years of steelhead fishing. The other respondent discussed steelhead fishing with his contemporary spear, river otter predation, steelhead life history and the impacts on steelhead spawning from timber harvest practices. Anthony Peele interviewed three other Hydaburg respondents using the interview schedule/guidelines. Information gathered through these interviews is summarized below.

- Fishing Locations: Key respondents reported harvesting steelhead on the Hydaburg River and Saltery Creek. Other harvest locations included, Eek Lake, Klawock River, Natzuhini, Sulzer, Cable, and Twelve Mile creeks.

- Harvest Timing: Key respondents reported harvesting steelhead in the spring, March through May. One respondent said he fishes the Klawock River winter steelhead run.

- Methods and Means: Respondents said that in the past, (prior to the 1980s) fishing sites were traveled to by boat but that today most access is by road. Respondents commented that the spear was more commonly used in the past (prior to the 1980s), today snagging gear and rod and reel are used. Respondents said that snaggers are easier to pack than a spear. In Hydaburg fishing with a partner is common. One respondent described why he prefers fishing with a partner. Two fishermen can walk up a stream, one on each side of the stream using their spear poles to probe under logs and stream banks in an effort to locate steelhead. If one fisher chases a steelhead out of hiding the other fisher has a chance at spearing it. One respondent discussed his preference for a barbed hook on his spear. *"I just switched over* (to a barbed hook) *when I found that I could take a shark hook. . . It had a barb and that way if you got a fish and if it fought too hard you'd still have it on your pole. . . these (*barbed hooks*) are easier to use.* (See Figure 5)

- Patterns of Use: Most of the key respondents said that they learned to fish for steelhead as a child. They were taught by their relatives, father, brothers, uncles or they learned on their own. *"Everyone in town fished for steelhead. . ." "The fishing spots were just handed down. People just knew what streams to check and when to start checking. . ." ". . . people just go where they customarily fished in the past."* One respondent stated that he has been fishing at the same location for fifty years. Another respondent said he has been fishing the same location since he was a teenager (fifty years ago). Respondents said that they only harvest enough steelhead to satisfy their family needs. One respondent recalled harvesting steelhead when gathering seaweed in May. One respondent said that there are fewer young people fishing today than in the past.

- Abundance: Most Hydaburg respondents thought that the steelhead runs were not declining. One respondent thought that the steelhead runs had declined and suggested that the decline may be partly due to river otter predation. *". . . the otter are really plentiful . . . right up until the middle 80s the otter prices were really good for furs, . . . So everybody that wasn't employed full time was trapping otter. So when I've been spearing on the creek I've noticed there was a lot of otter sign, you know where they go up on the bank to feed. . . . I figured, the reports (of) fewer steelhead, one of the reasons, not because of the fishermen, . . . because of the otter. Any of the streams you go along in the spring or summer, there is lots of otter sign. I've seen them (otters) swimming in the stream and I can't believe they can swim that fast, I think they can swim just as fast as the steelhead. You wouldn't think that big bulky animal could swim (*that fast*), . . . pretty impressive. Well they've got wide feet. They are probably really good in these little streams, probably quick. I can think of some little streams that have steelhead that you can step across the stream, and I've got a few steelhead out of those places. And the steelhead couldn't escape from an otter there. Even these bigger streams, I don't think a steelhead could (escape), because you chase a steelhead a little bit and they will hide and I've poked them out with a pole, I've even hit them with the pole trying to get them out, so I'm sure the otter could get them."*

- Competition: Some respondents said that competition for steelhead was about the same as in the past. Other respondents thought that competition has declined. One key respondent explained the decline in competition. *"It seems like there is less fishing occurring today then in the past. The younger . . . people don't seem to harvest as often as we did in the past. We fished way more because that was all there was to do."*

- Processing: Respondents said steelhead are eaten fresh, baked, or fried and sometimes frozen for later use.

- Regulation: Two respondents commented on regulations, they said they liked the Federal Subsistence Regulations because the regulations are "*more realistic then the state* (regulations). . . and "*recognize our ancestors rights to the resource."* One respondent commented, *"Natives should be able to harvest whenever and wherever as long as the resource is utilized."*

- Steelhead Life History: One respondent discussed steelhead spawning behavior in some detail. He said that steelhead like to spawn in gravel similar to the gravel preferred by spawning salmon. The respondent also commented on steelhead movements and the impacts from logging on steelhead spawning beds. *". . . one of the things that I have noticed about steelhead, they must come in at night or at the high tide and they leave again quickly after they spawn. Because you seldom ever get a steelhead that is spawned out, . . . That is the only way they could exist with predators or eagles and stuff trying to find them. [Interviewer: Because they are moving under the cover of night?] Yeah. You can go up any of the streams*

and tell when the steelhead are there by the spawning beds. It is usually the same places they spawn, wherever the rock formations are big enough so that they don't wash out. That is one of the things that logging has changed in the streams around here. The Saltery (Saltery Creek) *which is one of the best sources of water down here, every spring the gravel shifts around. I remember years ago when I first started fishing up there, there was some holes that were real big and deep and now they are high and dry. They have filled in with gravel and the logging has made that much difference. Even though they stayed back a ways, . . . a 50 or 100 foot barrier, well that doesn't mean much. It shifts the gravel anyway [It changes the hydraulics] the fish that do spawn, their spawn will be destroyed in the heavy rains."*

- Importance of Steelhead: Key respondents said that steelhead was important "*for subsistence"* because *"it provides fresh fish for the first part of the year." "It is a traditional practice that has been handed down to us from our ancestors."*

Klawock Key Respondent Interviews

James Rowan was hired by the Klawock Cooperative Association to assist Mike Turek, with interviews, fieldwork, and selection of key respondents. Mr. Rowan is a life long resident of Klawock, a subsistence hunter and fisher, and has fished for steelhead on Prince of Wales Island for over twenty years. Mr. Rowan worked with the Subsistence Division on the Klawock Subsistence Salmon project, and is familiar with key respondent interview procedures and participatory observation techniques.

The two researchers visited steelhead fishing locations in April. Turek also conducted an in depth interview with Rowan at this time. For the selection of Klawock key respondents Turek relied on Rowan's personal knowledge of active subsistence steelhead fishers. All of the respondents were subsistence steelhead fishers with many years of experience fishing on Prince of Wales Island. A total of seven key respondents were interviewed in Klawock. Interviews were conducted using the interview schedule/guidelines (Appendix A). Turek conducted and recorded two in depth interviews with Mr. Rowan, one in April and another in August. The August interview included review of the interviews Rowan had completed with Klawock steelhead fishers. Below is a summary of key respondent interviews.

- Fishing Locations: Klawock key respondents reported harvesting steelhead on the Klawock, Black Bear, Thorne, Hydaburg, and Harris rivers. Klawock fishers also reported taking steelhead on Staney, Saltery, Cable, Crab, and Shinaku creeks.

- Harvest Timing: Key respondents reported harvesting steelhead as early as January and as late as June. According to Klawock respondents most steelhead are harvested March through May (Spring). Respondents said that winter/spring runs are larger than fall runs, steelhead are bigger at this time and a better quality fish for eating.

- Methods and Means: All of the Klawock respondents fished for steelhead at road accessible locations. Respondents reported driving, walking, cycling and boating to steelhead fishing sites. Two respondents reported fishing for steelhead during deer hunting season, November, December. Rod and reel, spin-casting gear is the primary gear used by respondents. Bait is sometimes used, mainly for winter fish. Snagging gear is also used. In the past spears were used to harvest steelhead but there is little use of spears by Klawock fishers today. One respondent said that he has used a spear in the past and *"thinks snagging by hand line (is) a good idea."* Subsistence fishers with rod and reel tackle and snagging gear use traditional spear fishing locations on the Klawock River. Some subsistence fishers use fly fishing gear to take steelhead.

- Patterns of Use: Key respondents said that they started fishing for steelhead when they were children between five and twelve years old. They were taught by their fathers, brothers, and friends or learned by watching others. Respondents reported fishing with family and friends or by themselves. Steelhead fishing locations have generally remained the same over the years. Respondents reported harvesting between three and six fish per year, enough for their own households and sharing with family and friends. Two of the respondents said that their subsistence needs were not being met by their present harvests. One respondent said that it appears that there are fewer locals fishing for steelhead than in the past.

- Abundance: Key respondents gave several different answers to questions concerning steelhead abundance. Some said that steelhead numbers have gone up and down over the years, one noted a decline in the 1980s, two thought that Klawock River runs have declined and others reported no change. One respondent offered a more detailed discussion of steelhead abundance. According to this respondent the early spring steelhead runs are usually stronger with larger fish. The respondent added that he has not seen many 36 inch steelhead, seeing only two in the last twenty years. Average size of steelhead is 25 to 27 inches. This respondent thought that the Klawock River steelhead runs are declining, *"fishing holes (are) not as good as in the past."* He said that the Black Bear and Staney creek steelhead runs have also declined – both in productivity and quality of the individual fish. The respondent attributed these declines to impacts from increasing numbers of sport fishers.

- Competition: Several key respondents, but not all, said that competition for steelhead has increased due to a growing sport fishery. Respondents said that more non-locals were coming to the island to fish for steelhead. One respondent added that the number of Klawock residents subsistence fishing for steelhead has declined.

- Processing: Respondents said steelhead are mostly eaten fresh, grilled, and baked. Steelhead are also frozen, jarred, half-smoked, and sun-dried but they are not processed in large numbers.

- Regulations: Respondents that did comment on regulations said they should be able to keep steelhead under 36 inches, and permitted to use barbed hooks and bait.

- Steelhead life history: Steelhead are in the Klawock River from mid October to January and March through June. The October run spawns in January. The Klawock River has three steelhead runs in the spring. These spring runs begin in late March or early April. Steelhead feed on herring and other small fish while in the ocean, and in fresh water they feed on salmon eggs and insects. Steelhead will take artificial lures resembling caddis flies.

- Importance of Steelhead: Steelhead are an important subsistence resource because they are a fresh winter fish, and a traditional subsistence food.

- Miscellaneous: Predation. One of the respondents mentioned that river otters prey on steelhead. The respondent added that mink eat scavenged steelhead but are not likely to kill them.

Craig Key Respondent Interviews

Mike Turek worked with the Craig Community Association (CCA) staff, John Morris and Lisa Trimmer. CCA staff assisted Turek with fieldwork. Turek relied on Morris and Trimmer's knowledge of the community and subsistence harvesters for selection of key respondents. CCA staff conducted interviews with five key respondents. Mr. Turek conducted extended interviews with two key respondents, one in April and one in August.

Seven key respondents were interviewed in Craig. Key respondents were subsistence steelhead fishers, six males and one female, ranging in age from fourteen to mid fifties. All but one of the interviews conducted used the interview schedule/guidelines.

Turek conducted the first interview for this research project with a commercial fisherman on his fishing boat in the Craig boat harbor. This was an extended open-ended conversation with an expert on subsistence fishing, hunting and trapping. The respondent has lived on Prince of Wales Island his entire life and is familiar with both state and federal regulatory regimes. The respondents' knowledge of steelhead comes from both personal experience and what he learned from his tribal elders. This interview was used to develop the interview schedule/guidelines. Information from this interview is included in the summary of Craig key respondent interviews below.

In August Turek conducted an extended interview with a respondent who was interviewed by tribal staff in April. The respondent is a thirty-year Prince of Wales Island resident and a subsistence hunter, trapper and fisher. An adopted Haida clan member, the respondent has speared steelhead in the creeks near Craig and the northern part of Prince of Wales Island. The respondents' knowledge of steelhead was based on

his personal experience steelhead fishing and what he has learned from Haida elders. Two key respondents interviewed by Turek, the subsistence expert interviewed on his boat in April and the thirty-year island resident interviewed in August, account for most of the information presented for Craig.

- Fishing Locations: Primary fishing locations for Craig steelhead fishers are the Klawock, Thorne, Harris rivers, and Staney Creek. In the past Crab Creek was fished. One of the respondents who has been steelhead fishing on Prince of Wales Island for over thirty years, worked as a logger out of Lab Bay on the north end of the island. The respondent discussed steelhead fishing on the north end of the island at Buster, Flicker, Alder, Red, and Big creeks. "*These streams are good for steelhead into May. Good steelhead fishing at the confluence of the creeks. Limited number of fish in these streams. The streams are small, and the steelhead runs are also, perhaps 100 pair of steelhead in them. Patrons of fishing lodges are now fishing these streams for steelhead.*"

- Harvest Timing: Respondents reported fishing during the spring, primarily in March, April and May. One respondent reported fishing in February.

- Methods and Means: Respondents said that steelhead fishing does not usually take place in conjunction with other harvest activities. Respondents stated that they fished with their families, a fishing partner, or alone. Respondents said that they drive from Craig to the river or creek and walk into fishing locations. One of the key respondents uses a spear to take steelhead. The rest of the respondents use rod and reel tackle. The spear fisher described his gear, both rod and reel and spear; a medium to heavy rod and reel and a four pronged, barbed spearhead on a twelve-foot long shaft. The respondent explained that a long shaft is effective because steelhead are less likely to be spooked if the fisher is farther away from his prey. At the time of the interview the respondent was making a new spear, "*A pike pole painted black. You don't want a bright shiny pole or spear head, the steelhead will see this and spook. You want a dark camouflaged pole . . . spear fishing …. the purest form of subsistence fishing. . . . for subsistence purposes the best way to fish for steelhead is in a small stream with a spear. With a rod and reel a powerful fish such as a steelhead is hard to land in a small stream. … fish are injured when they get away* (from a rod and reel fisherman). *With a spear either they are caught or they get away. Carrying equipment such as a rod and reel and a net can be cumbersome in the woods getting to and from harvest streams. Water clarity is a problem for spear fishing. Not all streams are clear at any given time. Some streams are never clear enough. Some spear fishing streams* (presently permitted for subsistence steelhead fishing) *are never clear enough.*"

    - Patterns of Use: Key respondents said that they learned to fish from family members, fathers, brothers and friends. The spear fisher, taught to fish with a rod and reel by his father, has fished for steelhead throughout the Pacific

Northwest and on Prince of Wales Island for more than thirty years. Native Americans taught him to spear steelhead.

- Abundance: Craig respondents were reluctant to comment on steelhead abundance. One respondent said that Crab Creek steelhead numbers were down.

- Competition: All but one of the Craig respondents commented on the growing competition for steelhead. Respondents said that sport fishermen on the rivers and creeks have displaced subsistence fishermen. "(We are) *Seeing* (sport) *fishermen in places where they never used to be."*

- Processing: Respondents said steelhead are eaten fresh, frozen, pickled, and smoked. One respondent went into some detail describing how he prepares steelhead. *"Steelhead is a very healthy variety to anyone who eats a lot of fish. It is a specialty food, a delicacy, in that it is best for "pickled fish." It takes at least two steelhead to have enough for processing. It is pickled in (gallon) glass jars and eaten in small portions throughout the year. Smoked, pickled, and jarred are the preferred methods."* The respondent added, *"A steelhead caught at sea can be hung in the sun for two days then cooked and eaten. It is very good this way."*

- Regulations: One key respondent commented at length on subsistence regulations. The respondent supports catch and release fishing for the sport fishery on the larger rivers but would like the smaller steelhead streams limited to subsistence spear fishing, *"…spear fishing … the purest form of subsistence fishing. … for subsistence purposes the best way to fish for steelhead is in a small stream with a spear. With a rod and reel a powerful fish such as a steelhead is hard to land in a small stream. … fish are injured when they get away. With a spear either they are caught or they get away without being injured or handled."* The respondent would like to see small streams restricted to subsistence spear fishing and no size limit on steelhead taken with a spear, because (it is), *"Impossible to judge size* (of steelhead) *while* (the fish) *are in the water. … there are very few spear fishermen at this time and this regulation would have little or no impact . . ."* The respondent also said that he would like to see the harvest limit raised to six fish due to his families' needs and the number of fish needed for processing, adding, *"It takes at least two steelhead to have enough for processing."* One other respondent commented on regulations. The respondent said that he believes the 1994 state sport fishing regulations were responsible for the decline in subsistence steelhead fishing by Craig residents.

- Steelhead Life History: Craig respondents had little to say about steelhead life history. One respondent did offer comments. *"Steelhead are in different streams at different times. Yearly movements are specific to the particular stream. Steelhead eat candlefish and herring at sea, other small fish in fresh*

water. Steelhead spawn in small streams and rivers running directly into the ocean. The fish travel great distances to spawn in tributaries of large rivers."

- Importance of Steelhead: Respondents said steelhead are important as a subsistence food.

Thorne Bay Interviews

Mike Turek conducted interviews with four Thorne Bay steelhead fishermen in April 2004. The community of Thorne Bay began as a logging camp in the 1960s. Most residents of Thorne Bay are relative newcomers to the island. Thorne Bay fishermen interviewed for this report said they do not approve of subsistence steelhead fishing, believing that it is no longer necessary to take steelhead for food. All four respondents consider themselves sport fishermen, preferring catch and release of steelhead to harvesting the fish. Although there are some subsistence steelhead fishers who live in Thorne Bay, the author was unable to contact or interview them.

Three of the four interviews conducted in Thorne Bay were approached differently than interviews in Craig, Klawock, and Hydaburg. Residents of Thorne Bay preferred a public meeting to individual interviews. Arrangements were made for a public meeting in the Thorne Bay city offices. Three residents attended the meeting where the project was discussed and the author took notes. None of these three fishermen have lived on the island for more than ten years. All of the respondents are active catch and release, steelhead fishers and one a sport fishing guide.

The one extensive interview conducted in Thorne Bay was with a twenty-five year resident who is an avid sport fisherman. The respondent does not approve of subsistence steelhead fishing and supports catch and release fishing. The interview was conducted on the respondent's work site. A summary of the Thorne Bay public meeting comments, and key respondent interview follows below.

- Fishing Locations: Thorne Bay steelhead fishers reported fishing on the Thorne River, Staney and Eagle creeks, and the Rio Beaver.

- Harvest Timing: Respondents reported fishing in the fall, winter, and spring.

- Methods and Means: Rod and reel tackle, flies and spinners.

- Patterns of Use: The respondent who has lived on the island since the 1980s said steelhead uses have changed since the 1980s. During the 1980s loggers were fishing and harvesting steelhead and guided sport fishing was growing. *"Eagle Creek, a productive small creek, guides and loggers hit this pretty hard in the 1980s. Staney creek was also hit hard in the 1980s."* Catch and release regulations came into effect in 1994. This changed the fishery, limiting harvests, and steelhead stocks rebounded. According to this long term resident, *"Steelhead users today include local fishers, guided fishers, self-guided fishers (serious fly*

fishers) casual (tourist) fishers and Ketchikan fishers (75 percent are fly fishers).” The respondent added that he thinks the Federal subsistence regulations have changed the patterns of use resulting in fishers harvesting more steelhead.

- Abundance: Three of the respondents were reluctant to comment on whether or not it is harder to catch fish today than in the past. The long term resident did comment on steelhead abundance. The respondent has been steelhead fishing on the island since the early 1980s. During the 1980s loggers were fishing and harvesting steelhead and guided sport fishing was growing. The respondent said he saw a decline in steelhead runs in the late 1980s, early 1990s. Catch and release regulations came into effect in 1994, this changed the fishery – stocks have rebounded since then. *“By 1998-99 steelhead numbers increased – good solid numbers now. Thorne River, 500 to 1,000 steelhead in the river, 1,000 steelhead are in the Thorne River in a good year. This year so far it appears low, below 500 fish in the river but there are still a couple of months left before the end of the run.”*

- Regulations: All of the Thorne Bay respondents consider themselves sport fishers and do not support the Federal subsistence steelhead regulations. One respondent commented that he believes Federal subsistence regulations have contributed to changes in Thorne Bay steelhead fishing patterns. The respondent said that he has heard that some fishers are using spears in the Thorne River and he thinks that spear fishers could significantly impact steelhead populations. All four respondents were concerned about the impacts of subsistence harvests on small creek steelhead stocks. Respondents would like to see subsistence fishers stay away from the smaller creeks. All of the respondents said that they believe there is no longer a need for a subsistence steelhead fishery on Prince of Wales Island. One respondent added that the subsistence regulations have led to an interest by the Forest Service in steelhead stock assessments.

- Competition: Three respondents I spoke with in Thorne Bay said that they believe competition has increased on the Thorne River. Respondents said that competition has increased due to the growing sport fishery. Transportation improvements make it easier for people to travel to Prince of Wales Island. The daily ferry from Ketchikan and the improved road system on the island have led to an increasing number of visitors to Prince of Wales Island. Articles have also been appearing in sport fishing magazines and books about Prince of Wales Island steelhead fishing and respondents believe that these articles are attracting sport fishers to the island.

- One of the respondents said that some people are unable to differentiate between rainbow trout and steelhead, harvesting 12 inch to 22 inch steelhead, thinking they are taking legal Rainbow Trout.

Kasaan Interview

Kasaan was not included in the original research plan due to limited steelhead harvests, the 1998 harvest survey data shows three steelhead were caught with rod and reel tackle (Table 1). In August Mike Turek visited Kasaan and discussed steelhead and other Prince of Wales Island subsistence resource issues with community members and tribal staff. Due to the unplanned nature of the discussions with residents of Kasaan the interview schedule was not used.

According to tribal staff three or four active steelhead fishers live in Kasaan. Kasaan fishers use rod and reel tackle, fishing primarily on the Karta River. Tribal staff said that there were between 20 and 25 steelhead harvested by Kasaan fishers in 2004. These fish were shared within the community.

CHAPTER 4: DISCUSSION

In spite of the lack of archaeological evidence and few references in the ethnographic literature, anthropologists agree that steelhead have been harvested by Prince of Wales Island residents prehistorically to the present (Fifield, Smith, and Thornton 2005).

Both Tlingit and Haida have unique names for steelhead (*tayang*, in Haida and *Aasha't* in Tlingit). These Tlingit and Haida names for steelhead indicate that they had specific knowledge of and a long association with the species. Thornton (2005), commenting on the Tlingit word, *AaShát*, discussed this, " *AaShát, (often translated as "Lake Wife") implies that* (steelhead) *were associated with lake systems."*

With one exception, (Mosers' 1899 description of gaffing), early ethnographers and anthropologist failed to describe the Tlingits' and Haidas' customary and traditional uses of steelhead. Not until Langdon's observations in the 1970s, and Ellanna and Sherrod's research in the 1980s, were there any systematic attempts to document subsistence uses of steelhead on Prince of Wales Island. There are several possible reasons for the limited references to steelhead in the literature.

Steelhead were not harvested in the massive numbers that salmon, halibut, eulachon, and herring roe were. Steelhead were, and still are, primarily eaten fresh, consequently there was no complex preservation or processing as there was for salmon, eulachon, and herring roe. Steelhead were not a significant trade item. Although steelhead occur throughout the archipelago the fish are only abundant in certain rivers and creeks in southeast Alaska. For these reasons, steelhead were likely of little interest to ethnographers and consequently the harvest and use of steelhead is not well documented. Although there is little published information concerning subsistence uses of steelhead there remains a wealth of knowledge about the species amongst southeast Alaska residents.

Steelhead harvest techniques have evolved since Moser observed an Alaska Native gaffing steelhead on Ketchikan Creek in 1904, and Emmons (1991: 111) described the traditional spear/gaff used by southern Tlingits in the 19th century. The majority of subsistence steelhead fishers on Prince of Wales Island today prefer rod and reel tackle. Snagging gear on hand lines have been used for at least 75 years, and continue to be the gear of choice for some fishers in Hydaburg and Klawock. Subsistence harvesters still spear fish, and the spear/gaff described by Emmons was being used on Prince of Wales Island as recently as the 1980s.

Respondents mentioned different fishing locations, effectiveness of the gear, ability for selective harvests, and water quality as some of the factors affecting gear choices. Respondents explained that the small brush lined and log choked creeks prohibit the use of rod and reel tackle, requiring a spear/gaff or the hand line snagging gear for fishing success. Robert Sanderson in his discussion of the use of the spear/gaff and snagger on small brushy creeks and rivers stated, *"If you try casting with a rod you will tangle up*

hopelessly in brush." A Craig spear fisher commented on the effectiveness of the spear for steelhead fishing in small creeks, *"With a rod and reel a powerful fish such as a steelhead is hard to land in a small stream . . . fish are injured when they get away* (from a rod and reel fisherman). *With a spear they are either caught or they get away* (without injury)*."* The spear/gaff and the hand line snagging gear also allows fishers to select the individual fish he or she is going to harvest. Spear fishers and those using snagging gear commented on the ease of carrying the gear in the field as opposed to packing rod and reel tackle, *"Carrying equipment such as a rod and reel and a net can be cumbersome in the woods . . ."* Hydaburg fishers also commented on the ease of carrying snagging gear which collapses and can be slipped into one's pocket.

A Craig spear fisher commented on the need for clear water when attempting to harvest steelhead, *"Water clarity is a problem for spear fishing. Not all streams are clear at any given time."* The spear fishers' comments are interesting to compare with comments from another Craig respondent who fishes for steelhead with a rod and reel. *"The Thorne River, with its brown water and limited visibility makes it difficult for steelhead to see fishers. Clear water makes catching steelhead more difficult, the fish can see you."* Varying water clarity levels requires different gear and different approaches to fishing. A steelhead fisher using a spear/gaff or the snagging gear stalks the fish in a similar fashion to a hunter stalking game. A Hydaburg fisher (using snagging gear) mentioned that one must approach steelhead from the rear, or else they will see you and spook.

Subsistence Steelhead Harvest and Participation Levels

According to key respondents most subsistence steelhead fishers harvest between two and five steelhead per year. Discussions with key respondents indicate that participation in subsistence steelhead fishing and consequently steelhead harvests have declined since the late 1980s and early 1990s. Participation in subsistence steelhead fishing has declined for a variety of reasons, as noted above, ranging from a decreasing interest in fishing by young men, to the effects of the restrictive sport fishing regulations instituted by the state in 1994. Declining participation in the subsistence steelhead fishery has led to declining harvest levels

Steelhead Stock Assessments

Most of the respondents interviewed for this research said that they believed Prince of Wales Island steelhead stocks were abundant. These respondents stated that they had not noticed declines in the steelhead runs but added that steelhead run strength varies from year to year. A long-term resident of Thorne Bay commented on the increase in steelhead run strength in the Thorne River and Eagle Creek. The respondent attributed this to the restrictive regulations instituted by the state in 1994.

A minority of respondents did say that they thought runs had declined in the Klawock River, and in some of the rivers and creeks near Hydaburg. The Klawock respondent attributed this decline to the growing number of sport steelhead fishers on the river.

A Hydaburg respondent commented on what he believes to be the two primary causes for the decline in steelhead on the creeks where he fishes, negative impacts to spawning beds due to forestry practices and river otters. The respondent believes that increasing river otter predation is due to a decline in otter trapping. One of the Klawock respondents also mentioned river otter predation on steelhead in the Klawock River.

Steelhead Harvest Assessment

In many rural communities in Alaska subsistence harvesters are reluctant to return permits or mail out surveys (ADFG and ISER 1996). Subsistence users fear that the information they supply may be used to enforce fishing regulations, or to set harvest limits, that will not allow them to get the food they need or maintain traditional practices. Subsistence users are also reluctant to cooperate with federal or state permit requirements because they believe that commercial harvests, sport fishermen, damaged habitats, and natural predators have greater impacts on fish populations than subsistence harvests do (ADF&G and ISER 1996). As an example Prince of Wales Island respondents commented that sport fishers, habitat damaged by logging, and river otters have had greater impacts on steelhead populations than subsistence harvests.

Household harvest survey results and key respondent interviews indicate that the federal subsistence steelhead permit harvest data may not be recording many of the steelhead harvested by subsistence fishers on Prince of Wales Island. ADF&G household harvest survey, steelhead harvest estimates from the communities of Craig, Klawock, and Hydaburg were significantly higher than the recent federal subsistence steelhead permit harvest data.

Competition from Sport Fishing

Except for Hydaburg respondents, people interviewed for this report mentioned the growing sport steelhead fishery and the increasing competition for steelhead on Prince of Wales Island. Respondents said they are seeing more sport fishers and seeing them in places where few used to fish. Respondents also expressed concerns about fishers who do not know how to properly handle steelhead in the catch and release fishery or mistakenly identify small steelhead as rainbow trout.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

Residents of Prince of Wales Island continue to harvest steelhead as they have for centuries. According to key respondents and observations made in the 1970s, subsistence steelhead fishers take between two and five fish a year, sharing their harvest amongst family and friends. Steelhead are harvested in the fall, winter and spring. Most are eaten fresh, although some are frozen, smoked and pickled. Subsistence fishers continue to use spears and snagging gear but most rely on rod and reel tackle. Over the past thirty years participation in the subsistence fishery has declined, consequently so has the harvest. Most island residents interviewed for this report believe that steelhead stocks are now abundant but are concerned about the growing sport fishery and how this fishery will affect steelhead stocks. Subsistence fishers are also concerned about competition and crowding from the growing sport fishery.

The ADF&G, Sport Fish Division biologists and residents of Thorne Bay have expressed concerns about the impacts of steelhead harvests on small creek steelhead stocks. Thorne Bay respondents would like subsistence fishers to stay away from the small creeks. Regulatory proposals have been submitted to the Federal Subsistence Board requesting that the small creeks be closed to subsistence harvests. Interviews with subsistence fishers revealed a different perspective on this issue.

A Craig subsistence fisher with thirty years of experience fishing the islands' small creeks commented on the utility of the spear in harvesting steelhead versus rod and reel tackle. Steelhead are powerful fish and difficult to land in small streams and can be injured when caught with rod and reel tackle. With a spear, fish are either caught or get away without injury. The respondent suggested that the small creeks be closed to rod and reel tackle but that they remain open to spear fishing adding, "*there are very few spear fishermen at this time and this regulation would have little or no impact.*"

A Hydaburg respondent commented on the fisheries managers concerns about the small creek steelhead runs. The respondent believes that fisheries managers should be more concerned about the steelhead stocks on the large rivers, the Klawock and Thorne in particular. He based his argument on the fact that the Klawock and Thorne rivers have more people fishing them, both sport and subsistence, than the small creeks. Managers should be concentrating their efforts on the waters with the most fishing activity.

Steelhead stocks on Prince of Wales Island began declining in the late 1980s and early 1990s, in response to this conservation concern the Alaska Board of Fisheries established regulations in 1994 limiting the steelhead fishery to essentially a catch and release fishery. Limiting the fishery to a catch and release fishery may have resulted in an increase in steelhead stocks on Prince of Wales Island but it may also have contributed to a decline in subsistence harvests and the use of traditional gear by Klawock and Craig fishers. The lesson for managers is that actions taken for conservation purposes can be detrimental to subsistence traditions.

Before instituting regulatory restrictions managers must consider the impacts restrictions may have on subsistence harvests and traditions. In order to be able to consider these impacts managers need to be knowledgeable about the subsistence harvest and use of the resources they are managing. We hope that this report has contributed information managers will find useful in their efforts to manage the subsistence harvest of steelhead on Prince of Wales Island.

Recommendations

The Federal subsistence steelhead harvest permit and reporting system is failing to record many of the steelhead harvested on Prince of Wales Island. Harvest estimates from the ADF&G household surveys conducted in the mid 1990s estimated approximately 700 steelhead were harvested during a three-year period. The permit reporting systems' yearly harvest estimates have never been above 26 fish. Based on these relatively low harvest reports, the Federal subsistence steelhead harvest permit and reporting system appears to be failing to record most of the steelhead harvested on Prince of Wales Island.

The Division of Subsistence has found that rural Alaska residents are often reluctant to return permit reports or mail out surveys. Confidential face-to-face household surveys can result in more accurate harvest data but are expensive to administer and a burden on users. Managers need to work with local communities and subsistence users in finding a better way to collect subsistence steelhead harvest data on Prince of Wales Island.

This project has shown that tribal staff and local people are willing and able to conduct subsistence research. We recommend that federal and state fisheries staff work with the Hydaburg, Craig, Kasaan, and Klawock tribal organizations, and residents of Coffman Cove and Thorne Bay, particularly the individuals involved with this research, along with members of the SERAC in developing an effective harvest assessment program.

References

Alaska Department of Fish and Game, Division of Subsistence 2001. Community Profile Database.

Alaska Department of Fish and Game. 1991. Seven Criteria Worksheets for Findings on Customary and Traditional Uses of Fish and Shellfish in Southeast Alaska.

Alaska Department of Fish and Game and the Institute of Social and Economic Research. 1996. Synthesis of the Conference on Harvest Assessment April 20-22, 1995. Girdwood, Alaska.

Alaska Fish and Game Laws and Regulations Annotated, 2004-2005 Edition.

Bielawski, E.1992. Inuit Indigenous Knowledge and Science in the Arctic. Northern Perspectives 20.

Brouwer, J. 1998. IK, IKS, and ITK. Indigenous Knowledge and Development Monitor 6.

de Laguna, F. 1960. The Story of a Tlingit Community: A Problem in the Relationship Between Archeological. Ethnological and Historical Methods. Smithsonian Institution, Bureau of American Ethnology, Bulletin No. 172.

de Laguna, F. 1972. Under Mount Saint Elias: The History and Culture of the Yakutat Tlingit. Smithsonian Institution Press, Washington D.C.

Ellanna, L. J. and G. Sherrod 1987. Timber Management and Fish and Wildlife Use in Selected Southeastern Alaska Communities: Klawock, Prince of Wales Island, Alaska. Alaska Department of Fish and Game, Division of Subsistence, Juneau, Alaska. Technical Paper Number 126.

Emmons, G. T. Edited with additions by Frederica de Laguna. 1991. The Tlingit Indians. Seattle, The University of Washington Press and the American Museum of Natural History.

Federal Subsistence Management Program, Subsistence Management Regulations for the Harvest of Fish and Shellfish on the Federal Public Lands and Waters in Alaska, 2004-2005 Federal Subsistence Fisheries Regulations.

Fifield, T. USDA Forest Service, Archaeologist, Craig Ranger District, Craig, Alaska. March 17, 2005 email.

Grenier, L. 1998. Working with Indigenous Knowledge: A Guide for Researchers. Ottawa. International Development Research Centre (IDRC).

Jones, L. F. 1914. A Study of the Tlingits of Alaska. Fleming H. Revell Co.

Langdon, S. J. Information Concerning Uses of Steelhead by Klawock Tlingits. Briefing paper prepared for the U.S. Forest Service. October 14, 2002.

Moser, J. F. 1899. The Salmon and Salmon Fisheries of Alaska. U.S. Government Printing Office, Washington D.C.

Reeves, J. 2004. Draft Staff Analysis FP2005-29. USDA Forest Service.

Smith, J. USDA Forest Service, Archaeologist, Wrangell Ranger District, Wrangell, Alaska. March 18, 2005 email.

Swanton, J. R. 1908. Social Conditions, Beliefs, and Linguistic Relationships of the Tlingit Indians. Bureau of American Ethnology, 26th Annual Report, 1904-1905, Washington. Government Printing Office.

Thornton, T. Department of Anthropology Trinity College. March 18, 2005 email.

Vanek, S. 2003. Literature Review of Traditional Ecological Knowledge. Alaska Department of Fish & Game, Division of Subsistence, Juneau, Alaska

Warren, D. M. 1992. International Symposium on Indigenous Knowledge and Sustainable Development, Silang, Philippines, Indigenous Knowledge and Development Monitor: Special Issue 1993.

Appendix A.

Prince of Wales Island Subsistence Steelhead Key Respondent Interview Schedule/Guidelines

Key Respondent _____
Community _____ Date_____ Time, Start_____ Finish_____

Respondent Information. Male Female, Age ____ Tribal Membership_____
Number of years living on POW _____. Number of years in present community _____.

LOCATION(S) of Subsistence Steelhead fishing. What rivers, streams, creeks are used?

HARVEST TIMING: when does respondent fish for steelhead? **Fall**: September, October, November **Winter**: December, January, February **Spring**: March, April, May **Summer**: June

METHODS AND MEANS: Mode of access to the fishing site. Gear Used, location of gear (fishing location) duration of harvest period. Whether fishing takes place in conjunction with other harvest activities (hunting, fishing, trapping, gathering). Does respondent fish in a group, with a partner, or solo? Any changes in methods and means over time?

PATTERNS OF USE: How did the respondent learn to catch steelhead? Did someone teach the respondent? If so who? How did the respondent learn where to fish for steelhead? When did respondent start fishing for steelhead in these areas? Have the respondent's steelhead fishing locations changed over time? Does your present harvest satisfy you and/or your families needs?

ABUNDANCE: Changes in steelhead abundance, quality, or any other characteristics.

COMPETITION: Has competition for steelhead remained about the same over the years you have been fishing, or has it increased, decreased?

PROCESSING: How are steelhead processed? Eaten fresh, frozen, smoked, canned or jarred?

REGULATION: What does the respondent think about the federal Subsistence Steelhead fishing regulations?

STEELHEAD LIFE HISTORY: Seasonal movements of Prince of Wales Island steelhead? Seasonal movements of steelhead specific to the areas respondent fishes? Does the respondent know what steelhead eat? Where and/or when Steelhead spawn?

Why is getting steelhead for home use important to you and/or your family?

Appendix B. 2004-2005 Federal Subsistence Fisheries Regulations

Customary and Traditional Use Determinations.

Area: District 2, 3, and 5 and waters draining into those areas. **Species:** Salmon, Dolly Varden, trout, smelt and eulachon. **Determination:** *Residents living south of Sumner Strait and west of Clarence strait and Kashevaroff Passage.* (Federal Subsistence Board, Office of Subsistence Management. Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska 2004-2005, p. 60).

Prince of Wales Island. You may take steelhead trout on Prince of Wales Island and Kosciusko Islands only under the terms of a federal subsistence fishing permit. You must obtain a separate permit for winter and spring seasons and return the permit within 15 days of the close of the season before receiving another permit for Prince of Wales and Kosciusko Islands steelhead subsistence fishery. The permit conditions and systems to receive special protection will be determined by the local Federal fisheries manager in consultation with ADF&G. (Federal Subsistence Board, Office of Subsistence Management. Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska 2004-2005, p. 63).

Prince of Wales and Kosciusko Islands - Steelhead Trout Fishery

SEASON	GEAR	HARVEST LIMIT
Winter season Dec. 1 - Feb. 28/29	Dip net, spear, Rod and reel with artificial lure or fly. No bait allowed	2 fish per household (Season may be closed when harvest level cap of 100 steelhead is reached).
Spring season Mar. 1 - May 31	Dip net, spear, Rod and reel with artificial lure or fly. No bait allowed	5 fish per household (Season may be closed when harvest quota of 600 fish, minus the number of steelhead harvested in the previous winter subsistence steelhead fishery, is reached).

(Federal Subsistence Board, Office of Subsistence Management. Management Regulations for the Harvest of Fish and Shellfish on Federal Public Lands and Waters in Alaska 2004-2005, p. 63).

Table 1. Prince of Wales Island Steelhead Trout Harvests, Selected Study Years

Source: ADF&G, Division of Subsistence, Houeshold Surveys, Community Profile Database 2003

			Estimated Total Harvested					
Community	Study Year	Resource	Number	Pounds	Pounds Per Household	Pounds Per Capita	Number Per Household	Number Per Capita
Coffman Cove	1998	All	69	586	7.82	2.75	0.92	0.32
Coffman Cove	1998	Commercial Gear	0	0	0	0		
Coffman Cove	1998	Rod and Reel	69	586	7.82	2.75	0.92	0.32
Coffman Cove	1998	Non-Commercial Gear	0	0	0	0		
Craig	1997	All	211	1792	2.95	1.02	0.35	0.12
Craig	1997	Commercial Gear	0	0	0	0		
Craig	1997	Rod and Reel	211	1792	2.95	1.02	0.35	0.12
Craig	1997	Non-Commercial Gear	0	0	0	0		
Edna Bay	1998	All	0	0	0	0		
Edna Bay	1998	Commercial Gear	0	0	0	0		
Edna Bay	1998	Rod and Reel	0	0	0	0		
Edna Bay	1998	Non-Commercial Gear	0	0	0	0		
Hollis	1998	All	1	11	0.18	0.07	0.02	0.01
Hollis	1998	Commercial Gear	0	0	0	0		
Hollis	1998	Rod and Reel	1	11	0.18	0.07	0.02	0.01
Hollis	1998	Non-Commercial Gear	0	0	0	0		
Hydaburg	1997	All	172	1463	11.17	3.63	1.31	0.43
Hydaburg	1997	Commercial Gear	0	0	0	0		
Hydaburg	1997	Rod and Reel	95	808	6.17	2	0.73	0.24
Hydaburg	1997	Non-Commercial Gear	77	655	5	1.62	0.59	0.19
Kasaan	1998	All	3	22	1.21	0.5	0.17	0.07
Kasaan	1998	Commercial Gear	0	0	0	0		
Kasaan	1998	Rod and Reel	3	22	1.21	0.5	0.17	0.07
Kasaan	1998	Non-Commercial Gear	0	0	0	0		
Klawock	1984	All	338	2031	15.5	4.29	2.58	0.71
Klawock	1997	All	226	1919	6.33	2.27	0.75	0.27
Klawock	1997	Commercial Gear	0	0	0	0		
Klawock	1997	Rod and Reel	214	1822	6.01	2.15	0.71	0.25
Klawock	1997	Non-Commercial Gear	11	97	0.32	0.11	0.04	0.01
Naukati Bay	1998	All	1	11	0.17	0.08	0.02	0.01
Naukati Bay	1998	Commercial Gear	0	0	0	0		
Naukati Bay	1998	Rod and Reel	1	11	0.17	0.08	0.02	0.01
Naukati Bay	1998	Non-Commercial Gear	0	0	0	0		
Point Baker	1996	All	34	293	15.41	6.16	1.79	0.72
Point Baker	1996	Commercial Gear	31	262	13.81	5.53	1.63	0.65
Point Baker	1996	Rod and Reel	4	30	1.59	0.64	0.21	0.08
Point Baker	1996	Non-Commercial Gear	0	0	0	0		
Port Protection	1996	All	37	313	7.82	3.2	0.93	0.38
Port Protection	1996	Commercial Gear	14	122	3.06	1.25	0.35	0.14
Port Protection	1996	Rod and Reel	22	190	4.76	1.95	0.55	0.23
Port Protection	1996	Non-Commercial Gear	0	0	0	0		
Thorne Bay	1998	All	16	136	0.67	0.26	0.08	0.03
Thorne Bay	1998	Commercial Gear	0	0	0	0		
Thorne Bay	1998	Rod and Reel	16	136	0.67	0.26	0.08	0.03
Thorne Bay	1998	Non-Commercial Gear	0	0	0	0		
Whale Pass	1998	All	0	0	0	0		
Whale Pass	1998	Commercial Gear	0	0	0	0		
Whale Pass	1998	Rod and Reel	0	0	0	0		
Whale Pass	1998	Non-Commercial Gear	0	0	0	0		

Table 1. Prince of Wales Island Steelhead Trout Harvests, Selected Study Years

Source: ADF&G, Division of Subsistence, Houeshold Surveys, Community Profile Database 2003

			Percent of Households				
Community	Study Year	Resource	Using	Attempting	Harvesting	Giving	Receiving
Coffman Cove	1998	Steelhead	32	18	18	8	20
Coffman Cove	1998	Steelhead [CF Retention]	0	0	0	0	0
Coffman Cove	1998	Steelhead [Rod and Reel]	0		18	0	0
Coffman Cove	1998	Steelhead [Other Gear]	0		0	0	0
Craig	1997	Steelhead	8.7	8.1	6.4	2.3	2.3
Craig	1997	Steelhead [CF Retention]	0	0	0	0	0
Craig	1997	Steelhead [Rod and Reel]			6.4		
Craig	1997	Steelhead [Other Gear]			0		
Edna Bay	1998	Steelhead	0	0	0	0	0
Edna Bay	1998	Steelhead [CF Retention]	0	0	0	0	0
Edna Bay	1998	Steelhead [Rod and Reel]	0		0	0	0
Edna Bay	1998	Steelhead [Other Gear]	0		0	0	0
Hollis	1998	Steelhead	2.2	2.2	2.2	0	0
Hollis	1998	Steelhead [CF Retention]	0	0	0	0	0
Hollis	1998	Steelhead [Rod and Reel]	0		2.2	0	0
Hollis	1998	Steelhead [Other Gear]	0		0	0	0
Hydaburg	1997	Steelhead	21.6	15.7	15.7	9.8	9.8
Hydaburg	1997	Steelhead [CF Retention]	0	0	0	0	0
Hydaburg	1997	Steelhead [Rod and Reel]			11.8		
Hydaburg	1997	Steelhead [Other Gear]			3.9		
Kasaan	1998	Steelhead	7.1	7.1	7.1	7.1	0
Kasaan	1998	Steelhead [CF Retention]	0	0	0	0	0
Kasaan	1998	Steelhead [Rod and Reel]	0		7.1	0	0
Kasaan	1998	Steelhead [Other Gear]	0		0	0	0
Klawock	1984	Steelhead	56	44	39	14	25
Klawock	1997	Steelhead	10.4	11.3	9.4	1.9	1.9
Klawock	1997	Steelhead [CF Retention]	0	0	0	0	0
Klawock	1997	Steelhead [Rod and Reel]			8.5		
Klawock	1997	Steelhead [Other Gear]			0.9		
Naukati Bay	1998	Steelhead	2	2	2	0	0
Naukati Bay	1998	Steelhead [CF Retention]	0	0	0	0	0
Naukati Bay	1998	Steelhead [Rod and Reel]	0		2	0	0
Naukati Bay	1998	Steelhead [Other Gear]	0		0	0	0
Point Baker	1996	Steelhead	62.5	37.5	37.5	6.3	25
Point Baker	1996	Steelhead [CF Retention]	31.3	31.3	31.3	6.3	
Point Baker	1996	Steelhead [Rod and Reel]			6.3		
Point Baker	1996	Steelhead [Other Gear]			0		
Port Protection	1996	Steelhead	52	24	16	16	44
Port Protection	1996	Steelhead [CF Retention]	8	8	8	4	
Port Protection	1996	Steelhead [Rod and Reel]			8		
Port Protection	1996	Steelhead [Other Gear]			0		
Thorne Bay	1998	Steelhead	5.6	5.6	4.5	0	1.1
Thorne Bay	1998	Steelhead [CF Retention]	0	0	0	0	0
Thorne Bay	1998	Steelhead [Rod and Reel]	0		4.5	0	0
Thorne Bay	1998	Steelhead [Other Gear]	0		0	0	0
Whale Pass	1998	Steelhead	0	0	0	0	0
Whale Pass	1998	Steelhead [CF Retention]	0	0	0	0	0
Whale Pass	1998	Steelhead [Rod and Reel]	0		0	0	0
Whale Pass	1998	Steelhead [Other Gear]	0		0	0	0